

U.S. Serial No. 10/797,452
Amendment Dated September 28, 2006
Response To Office Action Dated May 23, 2006

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SEP 28 2006

REMARKS

The pending application was filed on March 10, 2004 with claims 1-20. The Examiner issued a Non-Final Office Action dated May 23, 2006 rejecting claims 1-6, 9-16, 19, and 20. In particular, the Examiner rejected claims 1-6, 9-16, 19, and 20 under 35 U.S.C. § 112, second paragraph, as being indefinite, claims 1, 3-4, 9-11, 13-14, and 19-20 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,575,532 to *Gross* in view of U.S. Patent No. 6,027,306 to *Bunker*, and rejected claims 2, 5-6, 12, and 15-16 under 35 U.S.C. § 103(a) as being unpatentable over *Gross* and *Bunker* in view of U.S. Patent No. 4,571,937 to *Albers*.

Claims 1-6, 9-16, 19-20 were pending in this application. Claims 1 and 11 have been amended, and claims 7, 8, 17 and 18 have been previously canceled without prejudice. In view of the amendments presented above, claims 1-6, 9-16, 19 and 20 are allowable, and the Examiner is respectfully requested to withdraw the rejections and issue a timely Notice of Allowance.

I. CLAIM OBJECTIONS

The Examiner objected to claim 1 due to minor informalities in the claim. Applicants note that claim 1 was amended in the Amendment and Response filed on February 7, 2006, correcting this informality. The Examiner is respectfully requested to withdraw the objection.

U.S. Serial No. 10/797,452
Amendment Dated September 28, 2006
Response To Office Action Dated May 23, 2006

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SEP 28 2006

II. REJECTION OF CLAIMS 1-6, 9-16, 19-20 UNDER 35 U.S.C. § 112

The Examiner rejected claims 1-6, 9-16, 19, and 20 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner questioned whether the statement, "a rotatable body", in Claim 1, line 8 is the same rotatable body mentioned in line 2 in Claim 1. Claims 1 and 11 have been amended to correct the lack of antecedent basis. Thus, the Examiner is respectfully requested to withdraw the rejection.

III. REJECTION OF CLAIMS 1, 3-4, 9-11, 19-20 UNDER 35 U.S.C. § 103(a)

The Examiner rejected claims 1, 3-4, 9-11, 19-20 under 35 U.S.C. § 103(a) as being unpatentable over United States Patent No. 3,575,532 to *Gross* in view of U.S. Patent No. 6,027,306 to *Bunker*. The Examiner stated that *Gross* discloses a turbine engine having a seal comprising a blade extending radially from a rotatable body and having a plurality of blades. The Examiner also listed numerous other elements that the Examiner believes is disclosed by *Gross*. The Examiner further stated that *Gross* discloses the invention substantially as claimed but fails to disclose the plurality of blades on the rotatable body and that the blades have a height of 0.6 mm. The Examiner concluded that it would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the blade of *Gross* to be a plurality of blades on the rotatable body having an angle of between 1

U.S. Serial No. 10/797,452
Amendment Dated September 28, 2006
Response To Office Action Dated May 23, 2006

and 60 degrees from the rotational axis and the blades to be 0.6 mm to provide an efficient turbine engine.

Independent claims 1 and 11 have been amended to state that "the plurality of blades extending radially from the stationary body are positioned at an acute angle relative to a rotational axis of the rotatable body in the at least one row of blades that is generally orthogonal to the rotational axis." In contrast, *Gross* discloses a turbine blade (11) with an airfoil (13) extending radially from a tip of the blade (11). A stator (15) is positioned radially outward from the blade (13) and includes two flanges (16, 17) extending radially inward toward the airfoil (13). The flanges (16, 17) are separated upstream and downstream of the airfoil (13) to form clearance space (18) so that the blade (13) does not contact the flanges (16, 17). The flanges (16, 17) disclosed in *Gross* are not a plurality of blades forming a row orthogonal to a rotational axis of the rotatable body, wherein the blades are positioned at an acute angle relative to the rotational axis as claimed.

Furthermore, *Bunker* does not disclose a plurality of blades, attached to a stationary body, forming a row orthogonal to a rotational axis of the rotatable body, wherein the blades are positioned at an acute angle relative to the rotational axis as claimed. Rather, *Bunker* discloses a plurality of flow discouragers (150, 250) extending from a rotatably turbine airfoil. *Bunker* does not disclose any blades extending inwardly from the stationary housing radially outward from the tips of the blades. Thus, neither *Gross* nor *Bunker* discloses a plurality of blades extending from a stationary body having the configuration as claimed in amended claims 1 and 11. Moreover, such a combination would not have been obvious to

U.S. Serial No. 10/797,452
Amendment Dated September 28, 2006
Response To Office Action Dated May 23, 2006

one of ordinary skill in the art at the time the invention was made. Rather, rejecting such a claim based on *Gross* and *Bunker* would be impermissible hindsight. Thus, in view of the amendments and the arguments presented, independent claims 1 and 11, and those claims depending therefrom, are allowable.

IV. REJECTION OF CLAIMS 2, 5-6, 12, 15-16 UNDER 35 U.S.C. § 103(a)

The Examiner rejected claims 2, 5-6, 12 and 15-16 under 35 U.S.C. §103(a) as being unpatentable over *Gross* and *Bunker* in view of U.S. Patent No. 4,571,937 to *Albers*. The Examiner argued that *Gross* discloses the invention substantially as claimed but fails to disclose blades angled to about 1-89 degrees from a rotational axis. The Examiner stated that *Albers* discloses such a configuration with a plurality of blades on a stationary body in which the blades are angled to about 1-89 degrees. The Examiner argued that it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of *Albers* with *Gross* and *Bunker*.

Albers discloses a system for controlling the flow of leakage fluids and cooling air of a rotor proximate to a tip of a rotatable turbine blade. The system includes a plurality of blades extending radially inward from a stationary outer housing. The blades are positioned downstream of exhaust orifices in the tip of turbine blade to direct cooling fluids exhausted from the turbine blades. The system is configured to redirect cooling fluids and combustion gases in a particular direction for most efficient use in downstream turbine stages. The system of *Albers* is not a seal.

U.S. Serial No. 10/797,452
Amendment Dated September 28, 2006
Response To Office Action Dated May 23, 2006

As discussed in Section III, claims 1 and 11 have been amended to state that "the plurality of blades extending radially from the stationary body are positioned at an acute angle relative to a rotational axis of the rotatable body in the at least one row of blades that is generally orthogonal to the rotational axis." Claims 1 and 11 also state that "a low pressure gas region in the turbine engine that is proximate to the plurality of blades extending radially from ~~[[a]]~~ the rotatable body and opposite to the plurality of blades extending radially from the stationary body, wherein the low pressure region has a pressure less than the high pressure region." There exists no teaching or suggestion in *Albers*, *Gross* or *Bunker* for the combination of the blades of *Albers* with *Gross* or *Bunker* because the blades of *Albers* are used to redirect fluids flowing downstream of the turbine blade. Combination of these blades with the configurations disclosed in *Gross* and *Bunker* would yield blades on a rotational body with downstream blades on a stationary body for redirecting the downstream flow. The pumping action of the blades on the rotational body would direct fluids upstream and away from the blade of *Albers*.

In stark contrast, the claimed configuration includes blades extending from a stationary structure, wherein the blades are positioned upstream, between the blade on the rotational body and the high pressure region. Thus, in the claimed configuration, blades on the rotational body direct fluids towards the high pressure region and towards the blades extending from the stationary body. Combination of *Albers*, *Gross* and *Bunker* would not yield the claimed invention because the stationary blades disclosed in *Albers* would not be positioned between the blades extending from the rotational body and the high pressure

U.S. Serial No. 10/797,452
Amendment Dated September 28, 2006
Response To Office Action Dated May 23, 2006

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SEP 28 2006

region. Rather, the stationary blades disclosed in *Albers* would be positioned between the blades extending from the rotational body and the low region. And such a difference would not be obvious to one of ordinary skill in the art to redesign because no such motivation was known in the art and is not disclosed in *Albers*, *Gross* and *Bunker*. Thus, for at least these reasons, amended claims 1 and 11, and those claims depending therefrom, are allowable, and the Examiner is respectfully requested to withdraw the rejection.

V. TWO MONTH EXTENSION OF TIME

This is a Petition for a two Month Extension of Time pursuant to 37 CFR § 1.136. Please charge the fee in the amount of \$450.00 for a two (2) month extension of time pursuant to 37 CFR § 1.17(a)(2) and charge any underpayment or credit any overpayment to Deposit Account No. 50-0951. A duplicate copy of this communication is enclosed.

U.S. Serial No. 10/797,452
Amendment Dated September 28, 2006
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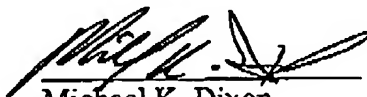
SEP 28 2006

CONCLUSION

For at least the reasons given above, claims 1-6, 9-16, 19 and 20 define patentable subject matter and are thus allowable. Should the Examiner believe that anything further is necessary in order to place the application in better condition for allowance, the Examiner is respectfully requested to contact the undersigned representative at the telephone number listed below.

No fees in addition to the extension of time fee are believed due; however, the Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, to Deposit Account No. 50-0951.

Respectfully submitted,



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